Integrated Hardware Availability on ISS

Space Station Utilization Advisory Subcommittee

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Background

- One aspect of the research replanning effort on ISS during the Shuttle downtime is the use of hardware already onboard ISS
- As part of the replan activity, we also encouraged investigators to submit proposals that potentially required use of hardware not in the payload inventory, with the intent that we would attempt to match science requirements with available systems hardware
- A list of onboard NASA research hardware and investigations was generated by the Research Planning Working Group (RPWG) and distributed to all research disciplines February 10, 2003
- RPWG research office members worked with their Investigator communities to solicit proposals based on the list
- Working with our ESA counterparts, in early March we received detailed information on ESA hardware either onboard ISS or planned for launch in the near-term; this information was distributed to NASA research disciplines, who again worked with their Investigator communities
- Additional discussions were held concerning international hardware sharing during the May 2003 User Operations Panel (UOP) meeting

Implementation During Expeditions 7 and 8

Sharing of ISS payload and systems hardware

- **Three investigations will "borrow" payload and systems hardware to complete their objectives during Expedition 7**
- **Education activities: 7 separate activities during Expedition 7 are in final stages of preparation; another 21 activities are in less mature stages and will be completed during Expedition 8**
  - **Primarily demonstrations of physical laws and onboard hardware such as the Microgravity Sciences Glovebox and maintenance and EVA tools**
- **Miscible Fluids in Microgravity (MFMG) physical sciences investigation will use:**
  - **Syringes from Human Life Sciences,**
  - **Commercial Generic Bioprocessing Apparatus (CGBA) from Space Products Development for thermal control,**
  - **Honey from Russian food supply, and food coloring and crew drinking straws**
  - **Other support equipment from ISS Systems**
- **In-Space Soldering Investigation (ISSI) physical sciences experiment will use soldering hardware from ISS Systems**

Implementation During Expeditions 7 and 8

Sharing of ISS payload and systems hardware

- Two Fundamental Space Biology experiments will use the SPD-provided CGBA during Expedition 8
- Both the *S. pneumoniae* Expression of Genes in Space (SPEGIS) and the *C. elegans* Model Specimen in Space (CEMSS) investigations use cassettes from the Advanced Separation (ADSEP) hardware, provided by Space Product Development. They are targeted for launch on the 13Progress flight in November 2003, with samples returning on 7Soyuz in May 2004. They will use the CGBA for thermal conditioning.

Implementation During Expeditions 7 and 8

International collaboration

- **An agreement exists to use the Microgravity Science Glovebox to process samples for the ESA Promiss experiment during Expedition 8, following the conclusion of the Spanish Soyuz Mission**
- **Discussions at the UOP have resulted in a collaborative effort between the NASDA Granada Crystallization Facility (GCF) and the NASA Commercial Generic Bioprocessing Apparatus (CGBA)**
  - **NASDA has a collaborative arrangement with Russia to fly samples in the GCF; nominal scenario is the GCF is launched on Progress, is stowed ambient in the Russian segment for a period of 1-2 months, and then returned to Earth via Soyuz**
  - **Thermal control of these samples would potentially yield better scientific results, so NASDA requested use of NASA CGBA**
  - **Work is underway to implement this for the 12Progress to 6Soyuz return time frame (August-October 2003)**